Zheyuan (Charles) Xu

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Professional Experience

Senior Software Engineer Sep 2024 – Present

Plus AI (Santa Clara, CA)

- Lead planning and execution of closed-course autonomous vehicle system testing and software releases.
- Work on training dataset curation and auto-labeling pipeline, which are used to train bird's-eye-view (BEV) perception network.
- Work on lane modules of perception stack, continuously improving its performance on various scenarios and un-covered corner cases.

Software Engineer (contract) Nov 2023 – Sep 2024

Mercedes-Benz R&D North America (Sunnyvale, CA)

- Co-invented proprietary cutting-edge software update algorithm that beats open-source and off-the-shelf solutions for millions of Mercedes-Benz vehicles, resulting in an extraordinary $1.2 billion in cost savings.
- Cross-compiled and integrated open-source Chromium and zstd libraries to AUTOSAR adaptive software stack running on real-time QNX OS, reduced binary size by 10 times and CPU load by 20%

AD/ADAS Software Engineer (L3 Urban Autonomy Demo Project) Jan 2022 – Sep 2023

U Power Robotics (Sunnyvale, CA)

- Developed a CUDA-based point cloud ego-motion compensation package for Robosense Lidars, achieving a remarkable 10 times reduction in pipeline latency compared to the CPU version
- Developed and maintained a ROS2 driver package for Continental Radars and a point cloud clustering package for the perception stack, enabling all-weather close-range obstacle detection
- Troubleshooted and ported a ROS1-based graph SLAM package to ROS2, enabling odometry estimation through frame-matching under GPS-less environments

Machine Learning Engineer (Intern) Oct 2021 – Dec 2021

Mavenir Systems Inc. (Richardson, TX)

- Developed ROS package for water bottle detection and motion planning of affordable robotic arms for the factory IOT project with YOLOv4 and offline reinforcement learning, achieving a success rate exceeding 60%

Machine Learning Engineer (Intern) July 2021 – Oct 2021

RATLab LLC (Seattle, WA)

- Led the development of neural network-based algorithms for a consumer electronic product, deployed on an ARM-based microcontroller with Tensorflow Lite, achieving 85%+ classification accuracy in breathing detection

Research Assistant Jan 2020 – Aug 2020

GTSR Lab (Atlanta, GA)

- Designed an ultra-compact mechatronics system for GT-MAB 2.0 with Solidworks and Eagle CAD
- Optimized firmware to reduce communication latency by over 150 times using embedded C with ESB (Enhanced Shock Busrt) libraries on NRF52840 microcontroller
- Co-authored a paper that was awarded the "Best Student Paper Award" at AIM 2021 and co-invented two patents that aimed at solving indoor flight control problems

Patents

Lightweight Flight Control System for Miniature Indoor Aerial Robots

- Co-inventor (US Patent App. 17/524,182)

Active motion capture marker apparatus and method for unmanned or remote vehicles or wearables

- Co-inventor (US Patent App. 17/389,621)

Publications

- **Advanced Object Detection and Pose Estimation with Hybrid Task Cascade and High-Resolution Networks**
  - Jingyu Xu, Yuhui Jin, Yaqiong Zhang, Zheyuan Xu, Wenqing Zhang
  - In Proceedings of IEEE ICICML 2024 (International Conference on Image Processing, Computer Vision and Machine Learning)

- **Key Safety Design Overview in AI-driven Autonomous and Battery-electric Vehicles**
  - Zheyuan Xu, Vikas Vyas
  - In Proceedings of IEEE AKGEC 2024 (2nd International Conference on Advancements & Key Challenges in Green Energy and Computing)

- **Enhancing Problem-Solving Abilities with Reinforcement Learning-Augmented Large Language Models**
  - Zheze Yang, Kai Xi, Xiaowei Bi, Zheyuan Xu, Fu Lei
  - In Proceedings of IEEE CEI 2024 (International Conference on Computer Science, Electronic Information Engineering and Intelligent Control Technology)

- **Optimizing Social Recommendations with GBSR: A Graph Bottleneck Approach for Reducing Noise**
  - Rui Wang, Shuaishuai Huang, Zheyuan Xu, et al.
  - In Proceedings of IEEE ICBAIE 2024 (International Conference on Big Data, Artificial Intelligence and Internet of Things Engineering)

- **Software Maintenance in Automotive and Aerospace Applications - An Overview**
  - Zheyuan Xu, Vikas Vyas
  - In Proceedings of icSoftComp 2024 : Sixth International Conference on Soft Computing and its Engineering Applications

- **Swing-reducing flight control system for an underactuated indoor miniature autonomous blimp**
  - Qiuyang Tao, Junkai Wang, Zheyuan Xu, et al.
  - IEEE/ASME Transactions on Mechatronics, 2021

Technical Skills

Programming Languages

- C++, Python, C#, C, SQL, JavaScript, Swift, Java, Matlab, HTML

Frameworks and Tools

- Eigen, PCL, CUDA, ROS2/ROS, Linux, Unity, Pytorch, Tensorflow, Numpy, Docker, Git, CMake, Bazel, Makefile, SocketCAN, Wireshark, AWS, GCP

Education

University of Washington

•Master of Science in Computer Science and Systems — *Sep 2020 - Dec 2021*

Georgia Institute of Technology

•Bachelor of Science in Computer Science & Electrical Engineering — *Aug 2015 – May 2020*

Personal Projects

RAIDAR (Xreal sponsor prize in Stanford "Immerse the Bay" XR hackathon) Nov 2023

- Mixed reality copilot for navigation and obstacle avoidance for cyclist and scooter riders.

AdaEye (Best Use of Google Cloud at MakeHarvard 2021) Feb 2021

- Developed a voice-controlled navigation app for the visually impaired.

Neomap (Radar.io Most Creative Award at MLH New Year New Hack 2021) Dec 2020

- Created an iOS mixed-reality app to share New Year's resolutions.

Public Speaker

ADAS & Autonomous Vehicle Technology Expo California 2024 August 2024

- Guest Speaker on AI Safety and Assurance in ADAS applications

Peer Review

IEEE Transaction on Vehicular Technology

IEEE Transactions on Multimedia